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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,973	NILES ET AL.	
	Examiner	**Art Unit**	
	Jason M. Repko	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 29 October 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-4,9-19,71,74-81,86,88 and 94-111 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,9-19,71,74-81,86,88 and 94-111 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 07 October 2005 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 4, 9, 10, 12-18, 71, 74, 75, 77, 78, 94, 95, 96, 98-104, 106 and 107 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,714,201 to Grinstein et al.**

3. With regard to claim 1, Grinstein et al. discloses "in a computer-implemented animation system, a method for animating an object, the method comprising:

a. receiving a first input, the first input specifying a first parameter behavior indicating how to change a value of a first parameter over time (*FIGS. 12, 15, 18 and 22; lines 25-27 of column 51: "Ease sliders control the acceleration and deceleration to and from a displacement sequence."*), wherein the first parameter applies to a generator applied to the object, wherein the generator comprises a repeating image (*lines 27-34 of column 51: "For example, a "Swing" motion may have a lifetime of 10 minutes with a displacement of 90 degrees left and right at a speed of one swing per second, a 1-second swing to the left followed by a 1-second swing to the right. A choice is given in the Ramp setting of AM or FM. AM controls the amplitude of the motion. At 50% IN the swing*

displacement will start at 0 degrees and ramp up to 90 degrees after 5 minutes. FM controls the frequency.");

b. animating the object by changing the value of the first parameter over time according to the specified parameter value (*lines 46-53 of column 75: "...generating an animated view of the given model in which the given model is rendered at each of a succession of time values with individual ones of the model's nodes being shown in each successive rendering as having a position and orientation determined as a function of the value for the rendering's corresponding time value of the position and orientation values defined by the node's associated motion..."; lines 27-34 of column 51: "...At 50% IN the swing displacement will start at 0 degrees and ramp up to 90 degrees after 5 minutes..."*); and

c. outputting the animated object (*lines 17-20 of column 53: "Since Mojo is a real-time motion editor, the model of the running man is shown moving according to a set of motions that have been applied to the individual nodes of its hierarchical model."*).

Grinstein et al. does not use the language generator however the Ramp and Ease controls applied to the Swing motion applied to the object are analogous to a generator because the 10 minute motion comprising 1-second swing to the left followed by a 1-second swing to the right would repeat the image of the object at each position of the swing a plurality of times for the duration of the 10 minute motion.

4. The claim language "the first parameter applies to one element of a group consisting of a filter....and a generator...wherein the filter comprises...wherein the generator comprises..." is interpreted as requiring only one element of the group.

5. With regard to claim 4, Grinstein et al. discloses "receiving a second input, the second input specifying a second parameter behavior (*lines 4-7 of column 57: "In this case an add motion dialog box 566 will be displayed which contains a scrollable list 568 of previously defined motions. The user can select one of these motions and then click the apply button 570 which will then add the selected motion to the currently selected node."*), the second parameter behavior indicating how to change a value of a second parameter over time, and wherein animating the object further comprises changing the value of the second parameter according to the second specified parameter behavior (*lines 34-49 of column 37 as cited in claim 1; see section 6.2.8.4; lines 48-50 of column 45 (emphasis added): "Motions that comprise <u>more than one primitive motion</u> are called composite motions."; see also section 6.4.2.3 in column 46*). Table 24 in column 24 shows a table of motions. One of ordinary skill in the art would recognize that the system disclosed by Grinstein et al. is capable of applying a second parameter behavior to animate the object as shown in section 6.2.8.4, section 6.4, the "add motion" option described in lines 4-7 of column 57, and the "Mojo editor" in section 7.

6. With regard to claim 9, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should be averaged over time" (*lines 53-56 of column 28 (emphasis added): "Sometimes a complex motion is a blend of two motions acting independently. In contrast to hierarchy, blending is accomplished by weighted <u>averaging</u> of degree-of-freedom parameters, not by composing transformations."*).

7. With regard to claim 10, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should be changed using a user specified custom change" (*lines 12-20 of column 58: "The show parameter window also includes a frequency slider 558C,*

which defines the speed at which the swing motion being edited will be performed, a phase angle slider 558D that shifts the phase of the swing motion. Each of the sliders 558A through 558D includes a corresponding edit box 558AA through 558DD, which enables a user to see a numerical representation of the current value entered by a slider, or which enables the user to enter an exact desired numerical value.").

8. With regard to the following rejections of claims 12-18, it should be noted one of ordinary skill in the art would recognize that other motions could be substituted for the "Swing" motion and a plurality of behaviors could be substituted to modify the parameters of that motion used in the illustrative example used in section 6.2.8.3 from the statements in section 6.1.3 (The Run Time Engine):

> *The motion package 132, includes the motion class 134, sub-classes of the motion class called primitive motion classes 136, and the trajectory class 138. The motion class is the class which is used to defined the motion of an object. Each object for which the OpenMotion System is to compute a motion is given an instance derived directly from the motion class or from a subclass of this class.*

9. With regard to claim 12, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should oscillate over time" (*lines 41-42 of column 37 (emphasis added): "...// first, define a signal that <u>oscilates as a funct(time)</u> from -1 to 1 ScalarVar signal = sin(simTime( )) // now, using this signal, define a "Shake" motion that moves back and // fourth along the X axis Motion shake; shake.position(Vector::Xaxis * signal); ..."*).

10. With regard to claim 13, Grinstein et al. discloses "the first parameter behavior indicates the value should ramp over time" (*lines 58-59 of column 25: "One creates a Motion by declaring*

a variable using the Motion type. Motion myMotion;"; line 9 of column 26: "...acceleration a Vector dv/dt, time derivative of velocity orientation..."; lines 22-25 of column 51: "Specialized settings have Ramp and Ease controls. Examples of the Specialized tab are shown in FIGS. 12, 15, 18, and 22. The Ramp sliders control the acceleration and deceleration in and out of an entire motion.").

11. With regard to claim 14, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should be randomized" (*lines 38-41 of column 38: "...the velocity direction will be // varying randomly. BehaviorVar wander=(velocityControl(randomDir(simTime( )))..."*).

12. With regard to claim 15, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should change over time according to a specified rate" (*lines 59-61 of column 37: "// the StraightMotn is constructed so that it moves in the +Z direction at a // constant speed of 10 units per second. StraightMotn.velocity(0, 0, 1);"*).

13. With regard to claim 16, Grinstein et al. discloses "the first parameter behavior indicates that changes to the value of the first parameter should be executed in reverse order" (*lines 62-65 of column 58: "In other embodiments of the invention different ranges of simulated clock speed change could be allowed, including negative speeds, which would make motions run backwards."*).

14. With regard to claim 17, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should not change" (*lines 57-59 of column 29: "Sometimes one needs to set a motion parameter to a fixed value. This is done by a sub-class of behaviors called a constant controller..."; section 6.2.6.2*).

15. With regard to claim 18, Grinstein et al. discloses "the first parameter behavior indicates that the value of the first parameter should wriggle over time" (*lines 30-45 of column 45: "Shake translate back and forth 2.1 jiggle multidirectional soft random shake...2.3 shimmy random shake in one direction...45 totter random rotations on the horizontal 4.6 wobble random rotations on vertical"; see also line 20 of column 46*).

16. With regard to claim 71, Grinstein et al. discloses "a method for animating an object using a behavior, comprising:

d. outputting an original animation for the object according to a first parameter behavior (*lines 17-20 of column 53: "Since Mojo is a real-time motion editor, the model of the running man is shown moving according to a set of motions that have been applied to the individual nodes of its hierarchical model."*), the first parameter behavior (*Gravity global controller as disclosed in 6.4.2.10, column 49*) indicating how to change a value of a first parameter over time (*lines 12-14 of column 29: "A Behavior is an action that changes a motions parameters."; lines 22-23 of column 29: "A Behavior expression may be a single action , or a list of actions..."; lines 60-62 of column 49: "Wind and Gravity are two global controllers that influence Controlled motions. The variable parameters on a controlled motion are derived from the controllers."*), wherein the first parameter applies to a motion behavior applied to the object (*lines 1-2 of column 50: "There are currently 4 Controlled motions: Sail, Sway, Waver, and Whirl, as is indicated in Table 29."*);

e. concurrently with outputting the original animation (*lines 7-11 of column 58: "As the user changes any of the controls shown in the show-parameters window 558, a*

corresponding interactive change is made to the animation of its associated motion in the scene-view window 503."; see FIG. 42 shows a dialog box 558 to accept user input concurrently with an animation 503):

i. receiving a first user input, the first user input directly specifying a second parameter of the motion behavior (*lines 31-32 of column 7: "FIG. 29 shows the Motion Editor/Viewer's dialog box for setting the parameters of the Sway Controller"*); and

ii. receiving a second user input, the second user input directly specifying (*lines 38-39 of column 7: "FIG. 32 shows the Motion Editor/Viewer's dialog box for setting the parameters of the Wind Controller"*) a second parameter behavior (*Wind global controller as disclosed in 6.4.2.10, column 49*), the second parameter behavior indicating how to change a value of the second parameter over time (*lines 60-62 of column 49: "Wind and Gravity are two global controllers that influence Controlled motions. The variable parameters on a controlled motion are derived from the controllers."*);

f. outputting an updated animation for the object (*lines 5-11 of column 63: "After such call is made with such a change to the parameter of a motion, the next time a call is made to om::update() the position, orientation, and scaling value of the motion will be updated, taking such a change into account. As a result, the system enables a user to see the effect of changes in the definition of the motion upon the operation of that motion as such changes are made."*) according to the first parameter behavior and further according to the second parameter behavior (*lines 55-59 of column 57: "When the show-parameters*

option is selected for a model node that has had a plurality of motions associated with it, the window will be shown for the, top-most motion node under that model node, which will be the most recently added motion.").

17. Grinstein's "controlled motion" (i.e. Sway) is analogous to the claimed "motion behavior," and the dialog box in FIG. 29 provides a means for directly specifying parameters to the Sway controlled motion. The Gravity and Wind global controllers are analogous to a first and second "parameter behavior." The Wind global controller is directly specified via the dialog box in Figure 32.

18. With regard to claims 74 and 75, Grinstein et al. discloses "outputting the updated animation is performed without interrupting the animation for the object" and "the updated animation reflects the application of the second parameter behavior in real-time" (*lines 7-11 of column 58 (emphasis added): "As the user changes any of the controls shown in the show-parameters window 558, a <u>corresponding interactive change</u> is made to the animation of its associated motion in the scene-view window 503."; lines 5-11 of column 63 (emphasis added): "... As a result, the system enables a user to see the effect of changes in the definition of the motion upon the operation of that motion <u>as such changes are made.</u>"*).

19. With regard to claim 77, Grinstein et al. discloses "outputting the original animation and outputting the updated animation each comprise rendering each of a plurality of frames sequentially" (*lines 51 of column 16 through line 3 of column 17 discloses the update loop which sequentially render a plurality of frames until the loop termination condition is met*).

20. With regard to claim 78, Grinstein et al. discloses "outputting the original animation and outputting the updated animation each comprise rendering each of a plurality of frames

sequentially by calculating a current frame based on a previous frame" (*lines 17-20 of column 6: "The algorithm must synchronize and dispatch updates at each frame, as well as predicting, detecting and resolving interactions, such as collisions, that might occur between frames."; TABLE 18 in column 32: "...Time accumulated in previous and current activations."; lines 20-25 of column 32: "For example, a state that is active for 10 seconds, then transitions to another state..."*).

21. With regard to claim 94, Grinstein et al. discloses "in a computer-implemented animation system, a method for animating an object, the method comprising:

g. receiving a first input, the first user input <u>directly</u> specifying a first parameter of a motion behavior applied to the object (*lines 31-32 of column 7: "FIG. 29 shows the Motion Editor/Viewer's dialog box for setting the parameters of the Sway Controller"*);

h. receiving a second user input, the second user input <u>directly</u> specifying (*lines 38-39 of column 7: "FIG. 32 shows the Motion Editor/Viewer's dialog box for setting the parameters of the Wind Controller"*) a first parameter behavior (*Wind global controller as disclosed in 6.4.2.10, column 49*), the first parameter behavior indicating how to change a value of the first parameter over time (*lines 12-14 of column 29: "A Behavior is an action that changes a motions parameters."; lines 22-23 of column 29: "A Behavior expression may be a single action , or a list of actions..."; lines 60-62 of column 49: "Wind and Gravity are two global controllers that influence Controlled motions. The variable parameters on a controlled motion are derived from the controllers."*);

i. animating the object by changing the value of the first parameter over time according to the first parameter behavior; and outputting the animated object (*lines 5-11*

of column 63: "After such call is made with such a change to the parameter of a motion, the next time a call is made to om::update() the position, orientation, and scaling value of the motion will be updated, taking such a change into account. As a result, the system enables a user to see the effect of changes in the definition of the motion upon the operation of that motion as such changes are made.").

22. Grinstein's "controlled motion" (i.e. Sway) is analogous to the claimed "motion behavior," and the dialog box in FIG. 29 provides a means for directly specifying parameters to the Sway controlled motion. The Gravity and Wind global controllers are analogous to a first and second "parameter behavior." The Wind global controller is directly specified via the dialog box in Figure 32.

23. Claims 95, 96, 98-104 recite limitations similar in scope to those presented in claims 9, 10, 12-18, respectively. Claims 95, 96, 98-104 are rejected with the rationale presented with respect to claims 9, 10, 12-18, respectively.

24. With regard to claim 106, Grinstein et al. discloses "receiving a third input, the third input specifying a second parameter behavior, the second parameter behavior indicating how to change a value of a second parameter over time (*lines 4-7 of column 57: "In this case an add motion dialog box 566 will be displayed which contains a scrollable list 568 of previously defined motions. The user can select one of these motions and then click the apply button 570 which will then add the selected motion to the currently selected node."*), wherein animating the object comprises changing the value of the first parameter over time according to the first parameter behavior and further according to the second parameter behavior (*lines 5-11 of column 63: "After such call is made with such a change to the parameter of a motion, the next time a call*

is made to om::update() the position, orientation, and scaling value of the motion will be updated, taking such a change into account. As a result, the system enables a user to see the effect of changes in the definition of the motion upon the operation of that motion as such changes are made.").

25. With regard to claim 107, Grinstein et al. discloses "receiving a third input, the third input specifying a second parameter of the motion behavior applied to the object" (*section 6.4.3 and FIGS. 9-29 describe the dialog boxes used to receive used to specify a plurality of parameter of the motion behaviors applied to the object*); "receiving a fourth input, the fourth input specifying a second parameter behavior, the second parameter behavior indicating how to change a value of a second parameter over time (*lines 4-7 of column 57: "In this case an add motion dialog box 566 will be displayed which contains a scrollable list 568 of previously defined motions. The user can select one of these motions and then click the apply button 570 which will then add the selected motion to the currently selected node."*), and wherein animating the object comprises changing the value of the first parameter over time according to the first parameter behavior and changing the value of the second parameter over time according to the second parameter behavior (*lines 34-49 of column 37 as cited in claim 1; see section 6.2.8.4; lines 48-50 of column 45 (emphasis added): "Motions that comprise <u>more than one primitive motion</u> are called composite motions."; see also section 6.4.2.3 in column 46*). Table 24 in column 24 shows a table of motions. One of ordinary skill in the art would recognize that the system disclosed by Grinstein et al. is capable of applying a second parameter behavior to animate the object as shown in section 6.2.8.4, section 6.4, the "add motion" option described in lines 4-7 of column 57, and the "Mojo editor" in section 7.

Claim Rejections - 35 USC § 103

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

27. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

29. **Claims 2, 108 and 111 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,201 to Grinstein et al. in view of U.S. Patent No. 5,883,639 to Walton et al.**

30. With regard to claim 111, Grinstein et al. shows the limitations of parent claim 94, and "the first parameter is associated with the motion behavior applied to the object, and wherein the motion behavior comprises one from a group consisting of: a Crawl Left behavior; a Crawl Right behavior; a Scroll Up behavior; a Scroll Down behavior, a Randomize behavior; a Sequence behavior; a Position behavior; a Rotation behavior; an Opacity behavior, a Scale behavior, a Tracking behavior; and a Type On behavior," wherein Grinstein et al. shows a scale behavior (*TABLE 27 in column 47 shows a scale deformation "to proportionally change in size"*). Grinstein et al. does not disclose the object comprising a text object. With regard to claim 2 and 108, Grinstein et al. does not disclose "the object comprises a two-dimensional object." Walton et al. shows an animated object comprising a text object that can have behaviors attached to it (*lines 62-67 of column 12: "Line attributes, drawing modes, shapes and <u>text</u> may also be selected in accordance with techniques known to those skilled in the art."; Fig. 4b shows behaviors*).

31. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a text object as taught by Walton et al. in the system disclosed by Grinstein et al. The motivation for doing so would have been to enhance the usability and efficiency of the method in the computer implemented animation system so the animator can be more productive, otherwise the letters would have to be created by grouping primitive shapes in three dimensions. Therefore, it would have been obvious to combine Grinstein et al. with Walton et al. to obtain the invention specified in claims 2, 108 and 111.

32. Claims 3 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,201 to Grinstein et al. in view of U.S. Patent No. 6,011,562 to Gagne et al.

33. With regard to claims 3 and 105, Grinstein et al. discloses "animating the object comprises changing the value of the first parameter according to the specified parameter behavior (*lines 34-49 of column 37: as shown in claim 1*) and. While Grinstein et al. discloses key frames (*table 3 in column 15: "Define paths with key frames & scripting interpolating function"*), Grinstein et al. does not expressly disclose "receiving a second or third input, the a second or third input specifying a parameter keyframe indicating the value for the first parameter at a first point in time." Gagne et al. discloses "further comprising receiving a second input, the second input specifying a parameter keyframe indicating the value for a parameter at a point in time (*lines 60-64 of column 4: "For example, a position versus time F-curve can be modified such that an object moves with a linear or a non-linear speed, as desired by deleting, storing and/or repositioning keyframes and interpolation parameters with respect to the time axis in the F-curve editor."*), and wherein animating the object comprises changing the value of the parameter according to the specified parameter behavior and further according to the specified parameter keyframe" (*lines 55-59 of column 4: "For each time-changing parameter associated with the animation, the parameter is displayed in the F-curve editor for the keyframes and is interpolated for the remaining frames to form the F-curve which the animator can manipulate to change the parameter with respect to time."*).

34. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate keyframes as taught by Gagne et al. in the method and system disclosed by Grinstein et al. The motivation for doing so would have been to increase the functionality of the animation interface by providing the animator with the ability to vary the degree of control over

the animation. Therefore, it would have been obvious to combine Grinstein et al. with Gagne et al. to obtain the invention specified in claims 3 and 105.

35. **Claims 11, 88, 97 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,714,201 to Grinstein et al.**

36. With regard to claims 11 and 97, Grinstein et al. discloses a negation operator (*Table 6 of column 20: "...(void) Scalar& unary negate = (const Scalar& s)..."*). In the code snippet in section 6.2.8.3, Grinstein et al. discloses changing the value of a first parameter. Grinstein et al. does not expressly disclose the first parameter behavior indicates that the value of the first parameter should be negated. At the time of the invention it would have been obvious to one of ordinary skill in the art to employ the negation operator as disclosed by Grinstein et al. in Table 6 to the first parameter value of the motion. The motivation for doing so would have been to create an opposing, reversed or mirrored motion.

37. With regard to claims 88 and 110, Grinstein et al. discloses "in a computer-implemented animation system, a method for animating an object, the method comprising:

j. receiving an input, the input specifying a behavior to apply to the object (*Figures 29-32 show dialog boxes for accepting user input and a plurality of parameters for the sway and wind controllers*), the behavior indicating how to change a value of a parameter of an object over time (*lines 12-14 of column 29: "A Behavior is an action that changes a motions parameters."; lines 34-49 of column 37 (emphasis added): "6.2.8.3 Motion Derivatives...Motion [Derivative] shows how the 0-2nd order motion derivatives can be used as parameters to create complex, interrelated motions... // first, define a signal that <u>oscilates as a funct(time) from -1 to 1</u>...// now we can create a derived motion whose*

<u>*position is controlled by the // velocity*</u> *of the Shake motion. Motion derivedShake; derivedShake.positon(velocity(Shake)... "*);

k. animating the object by changing the value of the parameter of the object over time according to the specific behavior (*lines 46-53 of column 75: "...generating an animated view of the given model in which the given model is rendered at each of a succession of time values with individual ones of the model's nodes being shown in each successive rendering as having a position and orientation determined as a function of the value for the rendering's corresponding time value of the position and orientation values defined by the node's associated motion..."; section 6.2.6 describes Behaviors which changing the value of a first parameter over time*); and

l. outputting the animated object (*lines 17-20 of column 53: "Since Mojo is a real-time motion editor, the model of the running man is shown moving according to a set of motions that have been applied to the individual nodes of its hierarchical model."*).

38. In addition, Grinstein et al. discloses proximity predicates (*lines 65-67 of column 33: "These predicates test the relationship between a Motion's boundary attribute and another boundary."*) that trigger state transitions (*line 63 of column 30*). Grinstein et al. defines state transitions in section 6.2.6.4:

> A behavior may represent a complex finite state machine. Each state contains a list of actions to be performed when entering that state. Each state also has a list of state transitions. Each transition is guarded by a Boolean condition. The conditions are activated when the state is first entered. When the condition evaluates to true, the corresponding action is triggered *(lines 47-54 of column 30).*

Grinstein et al. discloses a Drag behavior, (*in lines 22-23 of column 35, Boundary Behaviors, section 6.2.7.6, Table 23*), which "changes a position of the object based on a simulated friction" (*lines 17-22 of column 36: "The parameters, gain and bias, affect the normal and tangential components of a boundary interaction. These parameters can be adjusted to simulate effects of gain or loss of momentum, for example due to elasticity and friction. To set these parameters, they are chained off the end of the boundary Behavior..."*). Furthermore, Grinstein et al. discloses this can be done "regardless of the object's proximity to another object" because a boundary can be specified by boundary expressions as disclosed in 6.2.7.4 and Table 20 (*column 33*), which are not necessarily associated with an object. For example, Grinstein et al. discloses the following code to do so in lines 23-28 of column 36:

```
VectorVar myGain;
VectorVar myBias;
BoundaryVar myBounds;
BehaviorVar myBehav=reflect(myBounds).gain(myGain).bias(myBias);
```

39. The claim language "the behavior comprises one from a group consisting of...a Drag behavior...Rotational Drag..." is interpreted as requiring only one element of the group.

40. At the time of the invention it would have been obvious to affect apply the "Drag" behavior (*lines 17-22 of column 36*) to the object when the object encounters a boundary (*i.e. "myBounds"* in *lines 23-28 of column 36*) such that the boundary is not associated with an object but simply a region specified by a boundary expression. The motivation for doing so would have been to realistically model friction of an object traveling through a medium. Therefore, it would

have been obvious to use the teachings of Grinstein et al. to obtain the invention specified in claims 88 and 110.

41. Claims 19 and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,201 to Grinstein et al. in view of U.S. Patent Application Publication No. 2004/0036711 to Anderson.

42. With regard to claim 19 and 109, Grinstein et al. does not expressly disclose "an image object; a text object; a particle system." Anderson discloses "the object comprises one from a group consisting of: an image object; a text object; a particle system," wherein Anderson discloses a particle system (*paragraph [0057]: "The user can place a group of dirt particles where the bunny lands. A dust tool can be activated, for example by selecting an icon having a handle attached to a hoop. The user can sweep the dust tool through the dirt particles--with each sweep, all the particles within the hoop are moved slightly in the direction of the sweep."*).

43. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a particle system as disclosed by Anderson in the system disclosed by Grinstein et al. The motivation for doing so would have been model the physical properties smoke and explosions for example. Therefore, it would have been obvious to combine Grinstein et al. with Anderson to obtain the invention specified in claim 19 and 109.

44. **Claims 76 and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,201 to Grinstein et al. in view of U.S. Patent No. 6,266,053 to French et al.**

45. With regard to claims 76 and 79, Grinstein et al. discloses "outputting the original animation and outputting the updated animation" as shown in the rejection of parent claim 71;

however, Grinstein et al. does not disclose "caching the rendered frames" as in claim 76, or "periodically caching a subset of the rendered frames in an interval cache" as in claim 79.

46. French et al. discloses "caching the rendered frames" (*lines 45-48 of column 14: "The cache is opened in append mode, then each frame is displayed and cached in sequence, finally the cache is closed and the sequence can be replayed at full speed."*) as in claim 76, and "periodically caching a subset of the rendered frames in an interval cache" (*lines 60-62 of column 13: "There may be frame caches for a particular instant, or extended cached clips, which have a finite duration. "*) as in claim 79.

47. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate a cache for frames as taught by French et al. in the system disclosed by Grinstein et al. The motivation for doing so would have been to accelerate playback of the frames. Therefore, it would have been obvious to combine Grinstein et al. with French et al. to obtain the invention specified in claims 76 and 79.

48. **Claims 80 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,201 to Grinstein et al. in view of U.S. Patent Application Publication No. 2001/0030647 to Sowizral et al.**

49. With regard to claim 80, Grinstein et al. discloses the limitations of parent claim 71; however, Grinstein et al. does not disclose multi-threaded rendering. Sowizral discloses "outputting the original animation and outputting the updated animation each comprise evaluating, by a first thread, a first subset of frames, and evaluating, by a second thread, a second subset of frames" (*paragraph [0015]: "The render bin may have one or more render threads associated with it, thereby enabling parallel rendering utilizing multiple processors.";*

paragraph [0014]: "Each structure may be an object that manages selected data from the scene graph, and the plurality of <u>*threads*</u> *may be executable to render* <u>*one or more frames*</u> *corresponding to the scene graph."*).

50. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate multiple threads, as taught by Sowizral et al, in the system disclosed by Grinstein et al. for evaluating subsets of frames. The motivation for doing so would have been to improve performance. Therefore, it would have been obvious to combine Grinstein et al. with Sowizral et al. to obtain the invention specified in claim 80.

51. With regard to claim 81, Sowizral et al. does not expressly disclose "the first subset and the second subset of frames each comprise alternate frames of the animation." It would have been obvious for one of ordinary skill in the art at the time of the invention to alternate subsets of frames of the animation. The motivation for doing so would have been to improve performance, as one of ordinary skill in the art would recognize that adjacent subsets of frames would be displayed sequentially. Therefore, it would have been obvious to further modify the combination of Sowizral et al. and Grinstein et al. to obtain the invention specified in claim 81.

52. **Claim 86 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,714,201 to Grinstein et al. in view of U.S. Patent Application No. 2002/0003540 to Unuma et al.**

53. With regard to claim 86, Grinstein et al. discloses "in a computer-implemented animation system, a method for animating an object, the method comprising:

m. receiving an input, the input specifying a behavior (*Figures 29-32 show dialog boxes for accepting user input and a plurality of parameters for the sway and wind*

controllers), the behavior indicating how to change a value of a parameter of an object over time (*lines 12-14 of column 29: "A Behavior is an action that changes a motions parameters."*; *lines 34-49 of column 37 (emphasis added): "6.2.8.3 Motion Derivatives...Motion [Derivative] shows how the 0-2nd order motion derivatives can be used as parameters to create complex, interrelated motions... //first, define a signal that <u>oscilates as a funct(time) from -1 to 1</u>...// now we can create a derived motion whose <u>position is controlled by the // velocity</u> of the Shake motion. Motion derivedShake; derivedShake.positon(velocity(Shake)... "*);

n. animating the object by changing the value of the parameter of the object over time according to the specific behavior (*lines 46-53 of column 75: "...generating an animated view of the given model in which the given model is rendered at each of a succession of time values with individual ones of the model's nodes being shown in each successive rendering as having a position and orientation determined as a function of the value for the rendering's corresponding time value of the position and orientation values defined by the node's associated motion..."; section 6.2.6 describes Behaviors which changing the value of a first parameter over time*); and

o. outputting the animated object (*lines 17-20 of column 53: "Since Mojo is a real-time motion editor, the model of the running man is shown moving according to a set of motions that have been applied to the individual nodes of its hierarchical model."*).

54. Grinstein et al. does not expressly disclose "wherein the behavior comprises one from a group consisting of a Snap Alignment to Motion behavior and an Align to Motion behavior, each of which changes a rotation of the object based on a motion path of the object such that the

rotation is not changed if the motion path is straight." Unuma et al. discloses "wherein the behavior comprises one from a group consisting of a Snap Alignment to Motion behavior and an Align to Motion behavior, each of which changes a rotation of the object based on a motion path of the object such that the rotation is not changed if the motion path is straight" (*paragraph [0131]: "In this graphic image, the person stands on the ground in a vertical direction i.e. along the z-axis. First, the transit point specifying unit 81 designates a transit point 401 of the person in FIG. 16. The moving direction controller 82 then rotates the object 1 about the y axis so that the front side thereof faces to the transit point 401."*) and which can be configured regarding at least one of how quickly the object's rotation changes based on a change in the objects motion path (*paragraph [0131]: "First, the transit point specifying unit 81 designates a transit point 401 of the person in FIG. 16."*) and whether or not the object's change in rotation overshoots a new direction of the object. One of ordinary skill in the art would recognize that object 1 rotates about the y axis at a rate depending on the location of the transit point 401. Thus, by specifying the transit point 401, and in turn the difference in the original orientation of object 1 and the orientation object 1 when facing the transit point 401, one specifies how quickly the object's rotation changes based on a change in the objects motion path can be configured.

55. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate "changes a rotation of the object based on a motion path of the object such that the rotation is not changed if the motion path is straight" as taught by Unuma et al. in the system disclosed by Grinstein et al. The motivation for doing so would have been to realistically model human motion. Therefore, it would have been obvious to combine Grinstein et al. with Unum et al. to obtain the invention specified in claim 86.

56. **Claim 112 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,714,201 to Grinstein et al. in view of U.S. Patent No. 6,115,053 to Perlin.**

57. With regard to claim 112, the limitations recited lines 1-6 of claim 112 are similar in scope to lines 1-6 of claim 86, which are disclosed by Grinstein et al. In addition, Grinstein et al. discloses attraction behaviors (*line 58 of column 52 through line 6 of column 53: "6.4.3.6 Other Controllers... a Gravity Controller, a Viscosity Controller, and an Attraction Controller. The Gravity Controller will have the following as parameters: Strength, Direction, Location, Shape, and Focus...*), wherein the behavior can be modified using an influence parameter, which determines an area of influence, the area of influence determining whether an object is affected by the behavior (*lines 4-6 of column 53: "...the Attraction Controller will have parameters: Strength, Direction, Location, Shape, and Focus."*). Grinstein et al. does not expressly disclose "a Drift Attracted To behavior, which changes a position of the object based on a position of a second object while not affecting the position of a second object."

58. Perlin discloses changing a position of the object based on a position of a second object while not affecting the position of the second object (*lines 17-22 of column 8: "Object avoidance is accomplished by equipping each object with a small repulsive force vector and monitoring the vector sum. In a similar fashion, object attraction is accomplished by placing attractor fields around openings such as doorways."*). To the extent Applicant is unconvinced Grinstein et al. discloses an influence parameter, Perlin discloses the behavior can be modified using an influence parameter, which determines an area of influence, the area of influence determining whether an object is affected by the behavior (*lines 21-22 of column 8: "Vector magnitude increases as a character nears an object."; lines 65-67 of column 9: "...the step of assigning*

attractant and repellant vectors to define relationships between each animated character and one or more obstacles."). The vector magnitude, a property of the attractor field, is analogous to an influence parameter because the effect the of the attract behavior increases with the vector magnitude, through "monitoring the vector sum" of the object. Likewise, The "area of influence" of the attractor is established according to the values of vector magnitude, which "increases as a character nears an object."

59. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate in Grinstein et al. "an Attracted To behavior, which changes a position of the object based on a position of a second object while not affecting the position of the second object" and an influence parameter, should Applicant doubt such a parameter is present in Grinstein et al. The suggestion and motivation for doing so would have been to move objects toward doorways as suggested by Perlin in order to model human behavior. Therefore, it would have been obvious to combine Grinstein et al. with Perlin to obtain the invention specified in claim 112.

Continued Examination Under 37 CFR 1.114

60. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/29/2007 has been entered.

Response to Arguments

61. Applicant's arguments filed 29 October 2007 have been fully considered but they are not persuasive.

Claim 1

62. With respect to Applicant's arguments directed to the amendment to claim 1, Applicant's attention is invited to the new rationale for rejecting claim 1.

Claims 71 and 94

63. With respect to Applicant's arguments directed to the rejection of claims 71 and 94, it is submitted that Grinstein's controlled motion (i.e. Sway) is analogous to a "motion behavior," and the dialog box in FIG. 29 provides a means for directly specifying parameters to the Sway controlled motion. The Gravity and Wind global controllers are analogous to a first and second "parameter behavior." The Wind global controller is directly specified via the dialog box in Figure 32. Applicant is correct in stating that the controller dialog boxes indirectly influence the controlled motion; however, the parameter of the controlled motion are indirectly influenced by directly specifying how to change a value of that parameter. That is, the level of indirection is accomplished by the means of "directly specifying how to change the parameter" through the dialog box (i.e. the Wind dialog in Figure 32). Therefore, Applicant's arguments are unpersuasive.

Claim 86

64. With respect to Applicant's arguments directed to the amendment to claim 86, it is submitted that object 1 rotates about the y axis at a rate depending on the location of the transit point 401. Thus, by specifying the transit point 401, and in turn the difference in the original

orientation of object 1 and the orientation object 1 when facing the transit point 401, one specifies how quickly the object's rotation changes based on a change in the objects motion path can be configured. Therefore, Applicant's arguments are unpersuasive.

Claim 88

65. With respect to Applicant's arguments directed to the amendment to claim 88, Applicant's attention is invited to the new rationale for rejecting claim 88.

Claims 112

66. With respect to Applicant's arguments directed to the rejection of claim 112, it is submitted that Perlin's vector magnitude (*lines 21-22 of column 8*), a property of the attractor field (*lines 65-67 of column 9*), is analogous to an influence parameter because the effect the of the attract behavior increases with the vector magnitude, through "monitoring the vector sum" of the object. Likewise, the "area of influence" of the attractor is established according to the values of vector magnitude, which "increases as a character nears an object" (*lines 21-22 of column 8*). Therefore, Applicant's arguments are unpersuasive.

Other Claims

67. Applicant bases the argument for the patentability of the dependent claims on the reasons discussed with respect to the parent claims. As shown in the preceding paragraphs, Applicant's arguments are not persuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Repko whose telephone number is 571-272-8624. The examiner can normally be reached on Monday through Friday 8:30 am -5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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